

# Equalizer Tech Notes

## EQ Service Case Notes

Older problems:

Banding exceeds inside stock edge, won't reach outside stock edge; guard rails need spacers or laminate

How often the EQ feeds pellets when the glue pot is low

Early versions, every 60 seconds

Later versions, every 30 seconds

What does the blinking light indicates

Done several glue feeds, but detected no cut cycle; or it is about to go into rest mode

Glue pot test is occurring, but pilot valve does not fire pellets into the glue pot

If remove glue pot test hose, the pilot valve will still not fire

Removed wire from pressure sensor; glue still doesn't feed

Sensor adjustment process

How to adjust the temperature

See Operators Manual

How thick glue should be on the dispenser wheel

Not too thick, not too thin

How long of inactivity before sleep mode

18 minutes

Just bought machine, haven't used it yet, but the glue isn't feeding

Warm up, then see if air is blown to the sense hose every 60 seconds

Sensing occurs every 60 seconds, but no glue feed

Disconnect pressure switch and wait for cycle

When adjusting the solenoid wires to the plc, the feed action began

Tightened all hoses and wires

Seems to be sensing and feeding now

Back to square 1; send replacement solenoid

Problem with the tape application

First few inches of tape slide on the stock and don't stick well

Discovered on his own that he was feeding the tape upside down

Process to adjust proper slack

Wobbly wheel can add intermittent tape tension

How to clean glue pots

Contact manufacturer of brand of glue pellets for suggested solvents. Do not soak pot in solvents for a week or it will loosen the JB Weld on the copper rivets.

# Equalizer Tech Notes

Guillotine doesn't come out far enough

Adjusted the cylinder arm and it's ok now

Back door so out of alignment, can't plug in the ac cord, and can't access the screen and buttons

New cut outs have since been added to the back door

Glue pot heating up too quickly, started smoking and spilling over

Temp screen indicated a setting of 10; means it was previously at 9; no explanation why it should be at 9  
Successfully set it to 5

Glue pellets won't stop shooting in

If sense hose sealed completely, the pellets don't feed; when connected to full glue pot, pellets feed  
Sounds like the pressure sensor is a little too +; see glue pressure instructions for how to adjust it a little more –

Guillotine pressure dropped to 2lbs

When air is disconnected and reconnected it went back to 6 lbs

Sometimes the tape bends rather than cuts

Adjust the front screws on the guillotine assembly

Temperature problems

At power up, sometimes displays 'warming up', but counter doesn't count and element doesn't heat  
Other times displays 'warming up' and counter counts, but element still doesn't heat  
If disengage the glue pot, lift the element, reseat the element, and reinstall the glue pot it finally heats up  
At warmest point it doesn't melt the glue to the usual consistency  
Adjusting from 5 to 6 to 7 even 8; makes no significant change  
Glue pots are clean; no old or burnt glue  
Inspect for suspect wires to and from the heating element

Glue pot began smoking and boiling over before warm up was complete

Temp display indicates setting of 6, OK for Dorus glue

Temp sense wire on the analog module was loose in its terminal

Reinstalled wire

Wires are secure; temp is set to 6; warm up counter is counting; glue still overheated at 16 or so minutes  
Send new heating element

Installed new element; timer didn't start counting; pot overheated

Temp display indicated that it somehow got set to 10 again

Send eprom and instructions

No change; counter didn't count and glue overheated

Temp sense wires were reversed at the analog module

Corrected wire placement; counting occurs within a few minutes after power up

All fixed

# Equalizer Tech Notes

Knife blade has chinks; How to clean splashes

Blade is double-edged so can be turned over

Clean splashes by scraping with putty knife when pot is warm

Seems that the blade chips easily – they are carbide

Send cutter wheel

Cutter wheel was not flush with the blade

Tried to adjust the cutter wheel

How much side-to-side play is proper at bottom of guillotine

Not feeding glue

When black sense tube is unattached, the feed cycle is correct

Reamed the glue pot sense tube and now it works well

Guillotine arm does not extend all the way resulting in broken banding

Jam nut is secured with green loctite; not enough exposed shaft flat to loosen jam nut

Clevis is presently secured by only a few threads

Replace with inspected guillotine assembly

Several chunks missing from the knife blade

Considerable distance between the cutting wheel and the blade

Replace with inspected guillotine assembly

Amber light is very dim; display "warming up 0:00" for 15 minutes

Glue overheating

Send new control assembly with heating element and glue pot

Glue pot doesn't line up with the glue pot clamp

Overbending in the folding of the glue pot

Bend slightly back works great

Glue feed has begun doling only a few pellets at a time

Move white feeder hose up, baby powder the pellets for smoother flow

Machine isn't feeding glue pellets into the glue pot

Feed command would fire if the sense hose was removed from the glue pot

Feed hose misaligned with the blast hose in the magazine (customer error)

The pilot holes in the rigging arms are not matching up in the EQ

Tight tolerances sometimes make it difficult (but not impossible) to feed the bolt straight through the cage/tube

Why do the outriggers slope a bit

Thought that the stop bolt was supposed to feed through the single pilot hole on the lead end of the tube

Add more detail to assembly instructions

## Equalizer Tech Notes

The glue pellets aren't correctly moving into the glue pot

Manually activate the solenoid; confirm that the air bursts occur, but no pellets from magazine into hopper

Had been adjusting the position of the white hose, and maybe it's too far away from the black hose

Can the glue be replenished faster than he is using it

Early versions, every 60 seconds – can be upgraded to 30 seconds with new program installation

Later versions, every 30 seconds

Need to establish expectations of feet-per-minute, feet-per-full pot, melt time of pellets

Machine is stating that the glue pot is not in place

Glue pot is missing its grommet and the clamp knob is also missing

Completed the warm-up cycle, pressed the Delrin switch and the warm-up cycle started up all over again

Went into rest mode before it even finished warming up

Eeprom program error

Pellets bounce out of the hopper when fed from the magazine

Adjust position of feed hose or install screen lid for hopper

Guillotine will not work unless you tape a piece of wood to the front side

Adjust the screw on the delrin wedge

Adjust the lever on the guillotine sensor switch

Glue gaps under the banding and the guillotine will fire if the board is not pressed tightly to the black rails

See Herb Zach's video describing technique on our website

Banding tends to bow away from operator; as much as 3/16"

Band guide adjusted approximately 1 turn

Guillotine won't cut full stroke

Guillotine blade was damaged, blade was also installed backward

The heating element has failed

Logo was not receiving analog input from the element

Replacement heating element needed

Caution against kinks and broken strands

The machine is burning the glue

Temperature sense wire M+ was loose at terminal

Tighten and test again

Temperature setting of 0 or 4 results in overheating

Eeprom program error

Trouble getting machine to recognize new gluepot

Adjusted the screws on the glue tray farther back

Bent the sensor arm to touch higher up on the gluepot body

# Equalizer Tech Notes

Inconsistent pellet counts if fill pellets much above baffle; must stir pellets near baffle to enter feed area  
Baby powder helps glue pellets

Glue pot has overflowed

Tested the suction of the sense tube; tests ok  
The glue pot did not seal correctly with the sensing tube

Glue pellets won't feed

Feed hose is crimped and bent

Guillotine is erratic, sometimes fires when stock first engages the sensor; sometimes fires during middle of banding; sometimes won't fire when sensing trailing end of stock

Made bend adjustment to switch lever arm

Clogs in hopper extension and clogs in the pellet feed tube

Hopper extension clogs likely caused by extension touching the glue pot  
Replaced feed tube with newer tube material

Do outriggers mount permanently?

Outriggers rest on their own weight

The glue pot warms up and burns all the glue even though it's turned down to 1

Eeprom program error

Is there a way to speed up the fill rate

Eeprom with 30 second program  
Manually activate the pellet solenoid periodically

Running out of glue

Pellets had melted and clogged in his hopper extension  
Ensure that hopper extension does not come in direct contact with the pot

Guillotine sometimes engages at the beginning of switch press and at switch release

Focus on sensor switch and lever arm adjustment

Pellets aren't reaching the hopper

Found some pellets lodged in the feed hose

Glue pot dispenser wheel won't contact board

One of the support screws in the element tray is missing; use 8-32x1/2 and 8-32 kep nut

Glue pot is not refilling

Kink in the transport hose was causing the pellets to fall back into the magazine

How to adjust glue level sensitivity

See EQ Service Instructions paper

# Equalizer Tech Notes

Doesn't keep the glue pot full

Trying to run 64 ft in 5 minutes

Faster than the glue will melt even if we did feed pellets faster than 30 seconds

Customer says he can learn to stay within the machine's limitations, "worth it for the great bond"

Disconnected airlines inside

Glue pot sense hose was not connected to glue pot tube

Feed solenoid wouldn't fire even when the sense tube is detached from the glue pot

Q3 terminal was gripping insulation instead of wire conductor

Cannot get pellets to fire when adjusting connected sensor

Replaced switch; doesn't fire at all regardless of potentiometer adjustment

New version secondary regulator had turned off; no air for sensing bubble

Feeds pellets when glue pot hose is detached, but not when connected; glue pot tube seems clear

Adjust the pressure sensor switch

Guillotine won't fire at all

Little screw fell out of his Delrin guillotine activator

Replace guillotine blade

Open back door of machine

With 7/16 wrench remove the bolts holding the guillotine assembly in place

Disconnect air hose from cylinder

Slide guillotine assembly out from machine

Disconnect the screws holding the blade in place, replace blade

Make sure that the beveled edge sticks up above the metal and the bottom of the bevel edge is flush with the metal) Reconnect air, replace guillotine assembly bolt back into place.

# Equalizer Tech Notes

## Adjusting the Guillotine

Tight enough that there is no separation between the Cutting Blade and the Cutting Wheel. Loose enough that the guillotine can slide smoothly.

Loose enough that the Cutting Wheel can spin freely.  
Tight enough that there is no lateral movement.

Loose enough that the axis can rotate freely.  
Tight enough that there is no lateral movement.

Adjust the Clevis so that, when the cylinder arm is fully extended, the Cutting Wheel is at the end of the Cutting Blade.



**Cutting Wheel:** This should be adjusted so the wheel can spin with little force. The wheel should have very little (if any) lateral movement. To adjust properly, tighten the machine screw then back off  $\frac{1}{4}$  turn. While securing the Phillips end of the machine screw, tighten the jam nut on the other side. Spin the Cutting Wheel. If the Cutting Wheel is too tight, loosen the jam nut, turn the machine screw  $\frac{1}{8}$  turn CW, and re-tighten the jam nut. If the Cutting Wheel is too loose, loosen the jam nut, turn the machine screw  $\frac{1}{8}$  turn CCW, and re-tighten the jam nut.

**NOTE:** the Cutting Wheel should NOT have a sharp edge; it is designed to roll over the banding so that the blade will cut the banding.

**Swing Arm:** The Swing Arm should move freely back and forth with very little lateral movement. The Swing Arm, when pushed forward and released, should fall back to the starting position. To adjust properly, tighten the machine screw then back off  $\frac{1}{4}$  turn. While securing the Phillips end of the machine screw, tighten the jam nut on the other side. Manipulate the Swing Arm back and forth. If the Swing Arm is too tight, loosen the jam nut, turn the machine screw  $\frac{1}{8}$  turn CCW and re-tighten the jam nut. If the Swing Arm is too loose, loosen the jam nut, turn the machine screw  $\frac{1}{8}$  of a turn CW, and tighten the jam nut.

# Equalizer Tech Notes

**Cutting Wheel Alignment:** The Cutting Wheel should slide back and forth freely next to the Cutting Blade without putting tension on the blade. Loosen the jam nut and the flat head machine screw. Tighten the flat head machine screw until the Cutting Wheel just touches the Cutting Blade, then tighten the jam nut. Manipulate Swing Arm back and forth. Watch the contact between the blade and the Cutting Wheel. If the Cutting Wheel sticks on the blade, loosen the jam nut, turn the flat head machine screw  $\frac{1}{8}$  turn CCW, and re-tighten the jam nut. If there is a gap between the Cutting Wheel and the blade, loosen the jam nut, turn the machine screw  $\frac{1}{8}$  of a turn CW, and re-tighten the jam nut.

## EQ Specifications

Banding Material Width: up to 1"  
Banding Material Thickness: up to 1.5 mil  
Banding Material Bend Radius: up to 1.25"

Maximum Stock Width 7/8"

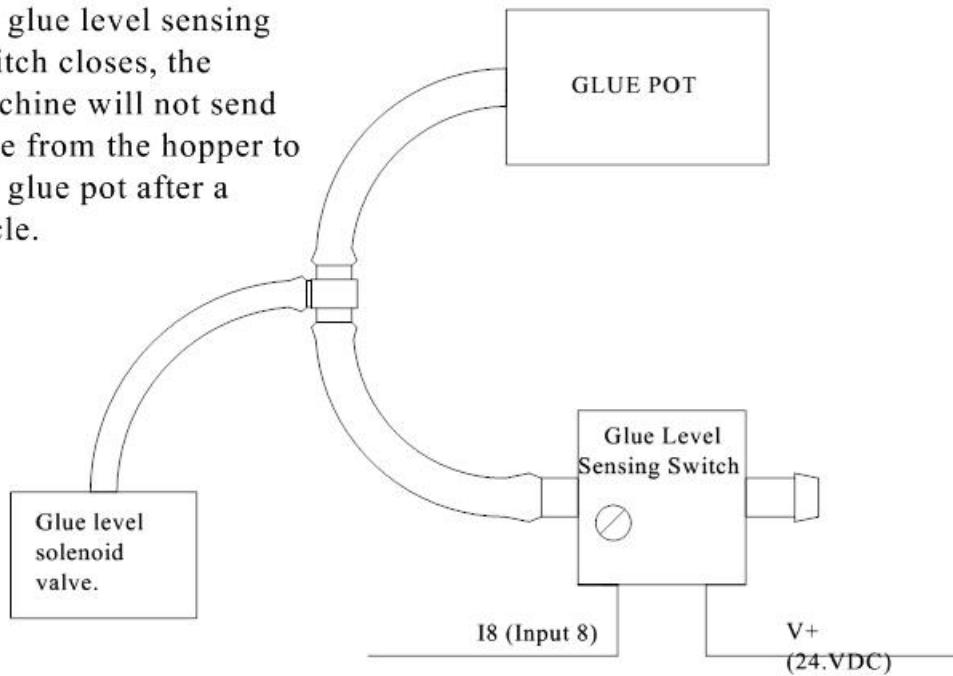
Recommend 1" banding for 7/8" stock  
Recommend 15/16" banding for 3/4" stock  
Recommend 7/8" banding for 5/8" stock

Temperature:  $\pm 10^\circ$  F

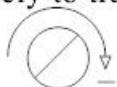
<i>Setting</i>	<i>Temperature</i>
0	0°
1	350°
2	360°
3	370°
4	380°
5	390°
6	400°
7	410°
8	420°
9	430°
10	440°

# Equalizer Tech Notes

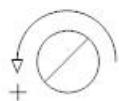
When the glue level sensing switch is open, the machine will send glue pellets from the glue hopper to the glue pot after a cycle. When the glue level sensing switch closes, the machine will not send glue from the hopper to the glue pot after a cycle.



If glue level sensing switch adjustment screw is turned clockwise the switch will close with less air pressure so glue pellets are less likely to transfer when glue pot level is low.



If the glue level sensing switch adjustment screw is turned counter clockwise, the switch requires more air pressure to close so glue pellets are more likely to transfer when glue pot level is low.



On your LOGO display the screen should be showing “Warming Up”

Press the DOWN arrow key and you should have a flashing Time/Date display. When you have that, press the RIGHT arrow key twice and you should have a display that looks something like this:

Q:  
O 1 2 3 4 5 6 7 8 etc...  
2

The first number on the O line, the 1 – is it ‘highlighted’? (as opposed to how the other numbers are displayed)

If YES, then check the output voltage on Q1,2 . It should be 120V.

If Q1,2 voltage is 120V, then it’s most likely your heating element.  
If Q1,2 is not showing 120V then check Q1,1. That should ALWAYS show 120V output

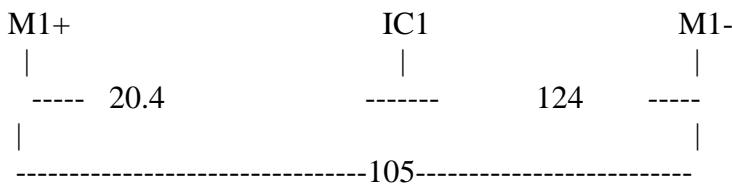
If Q1,1 does show 120V then your PLC is bad and needs to be replaced  
If Q1,1 does NOT show 120V, then it’s a wiring issue, check to make sure the wires are connected and not loose or detached.

If NO, then check the Thermistor (see diagram that I will attempt to draw below)

If the thermistor is OK, then we don’t know what the problem is exactly...  
If the thermistor is 15% off or more, then replace thermistor

To check thermistor values:

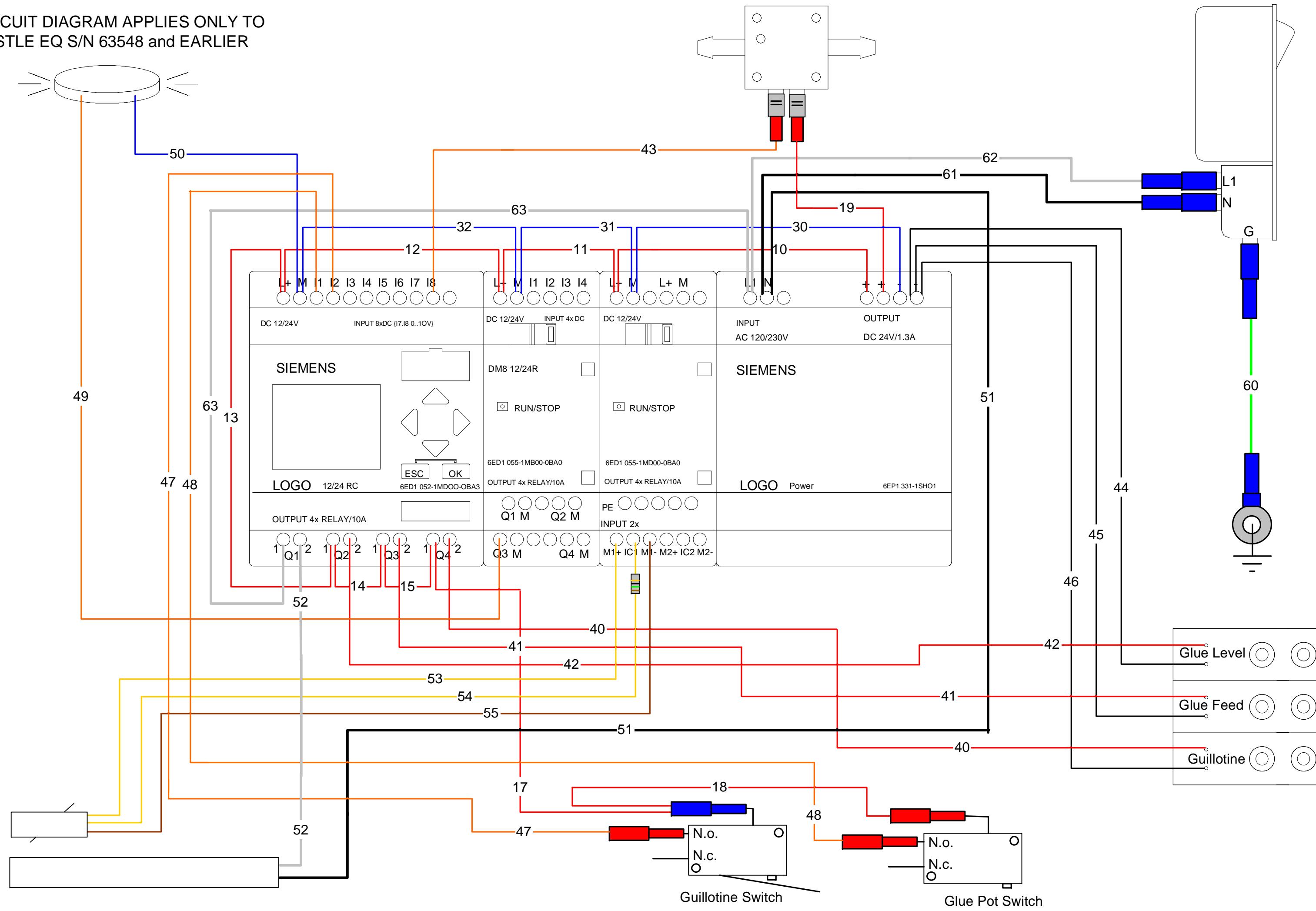
Machine = Off



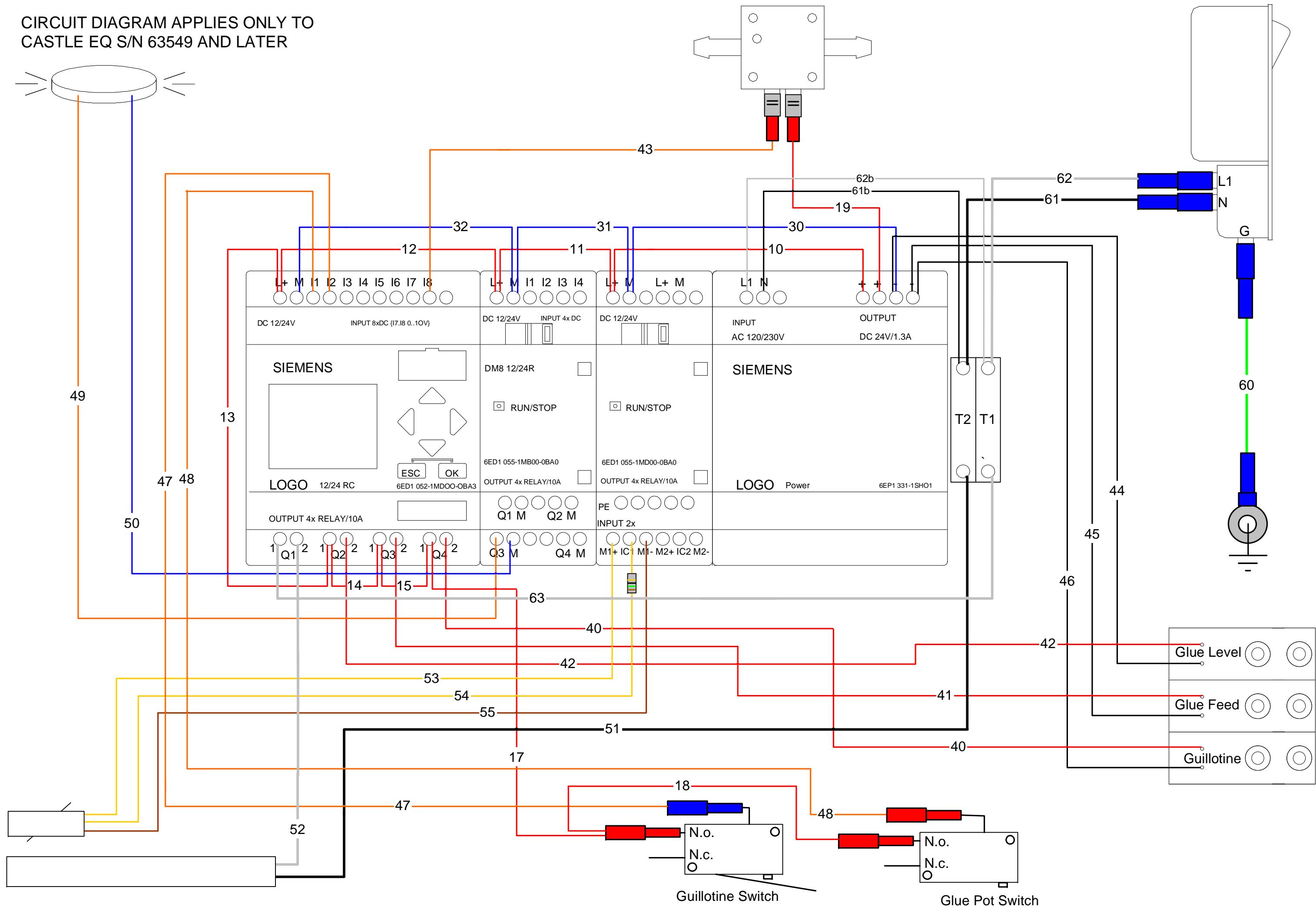
Enclosed is the EQ Wiring Diagram for your machine

Manuals and Diagnostic documents can be found on our website:  
[www.castleusa.com/support.html](http://www.castleusa.com/support.html)

CIRCUIT DIAGRAM APPLIES ONLY TO  
CASTLE EQ S/N 63548 and EARLIER



CIRCUIT DIAGRAM APPLIES ONLY TO  
CASTLE EQ S/N 63549 AND LATER



# HOTMELT ADHESIVES

Canplast's line of premium, high performance, ethylene vinyl acetate (EVA) hotmelt adhesives are specially formulated for various types of edging materials and banding machines used by makers of kitchen and bathroom cabinets, residential and RTA furniture, office furniture, store fixtures and others.

Commonly used in automatic edgebanders for applying wood veneer or PVC edgebanding to engineered wood panel edges, Canplast premium hotmelts are available in a number of different formulations and colors.

## **Hotmelt 2001 (translucent)**

- Premium EVA hotmelt with medium to high viscosity.
- Recommended for computer controlled panel processing centers, flow-through contour edgebanders as well as straight edgebanders.
- Ideal for thick and thin PVC, veneer, melamine, polyester and ABS edging.
- Excellent bond strength and heat resistance.
- Translucent color makes the lueline virtually disappear.
- Available in pellets.

## **Hotmelt 2020**

- Low temperature, low viscosity hotmelt.
- Specially designed for manual contour edgebanders or where hotmelt is applied directly to the edgebanding.
- Ideal for thick and thin PVC, veneer, melamine, polyester and ABS edging.
- Available as Natural color pellets.

## **Hotmelt 2022**

- All purpose, medium viscosity hotmelt ideal for all types of edging materials.
- Recommended for HolzHer edgebanders.
- Excellent resistance to hot and cold temperatures.
- Available in cartridges in Natural, Brown, White and Black colors.

## **Hotmelt 2024 (translucent)**

- Premium, low viscosity, cartridges.
- Recommended for HolzHer edgebanders.
- High bond strength and heat resistance.
- Glue line virtually disappears.
- Available in cartridges.

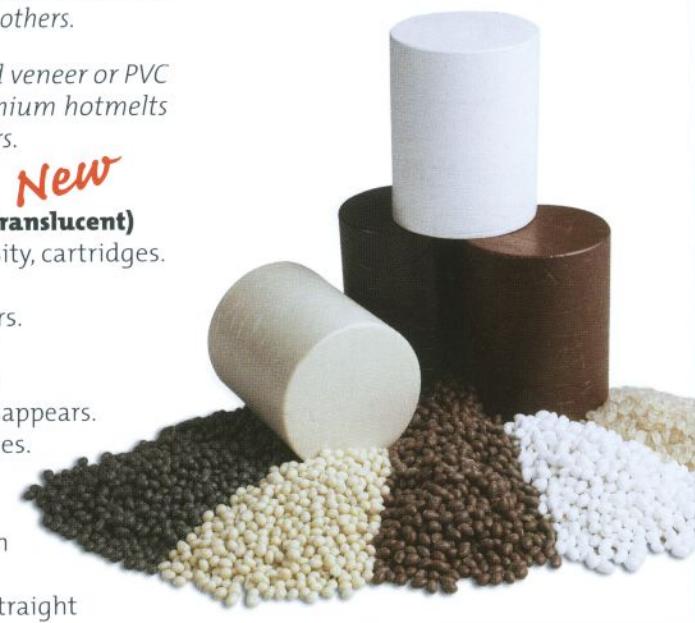
## **Hotmelt 2031**

- All purpose, medium viscosity hotmelt.
- Recommended for straight edgebanding and softforming.
- Ideal for all types of edging materials.
- Excellent resistance to hot and cold temperatures.
- Available in pellets in Natural, Brown, White and Black colors.

## **Hotmelt 2041**

- Premium hotmelt.
- Superior bond.
- A more forgiving hotmelt with greater viscosity consistency and better heat stability in the melt pot.
- Ideal for thick and thin PVC, solid wood, veneer, melamine, polyester and ABS edging applied with straight edgebanders.
- Available in pellets in Natural and White colors.

**New**



## PRODUCT INFORMATION

### CANPLAST PRODUCTS

#### **THERMOPLASTIC PVC**

*thick and thin PVC edgebanding in solid colors, woodgrains and patterns.*

#### **VENEER**

*thick and thin veneer edging in strips and continuous coils.*

#### **MELAMINE**

*edgebanding for softforming, wrapping and stainable applications.*

#### **T-MOLDING**

*more than 50 profiles and 39 colors*

#### **HOTMELT**

*premium EVA hotmelt adhesives*

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Sales offices throughout the United States, Canada and Mexico

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**CP CANPLAST**

*We've gone the distance to give you the edge*

# CANPLAST

## EDGEBANDING AND SOFTFORMING HOTMELT ADHESIVES

New

CHARACTERISTICS	2001	2020	2022	2024	2031	2041
TYPE	EVA	EVA	EVA	EVA	EVA	EVA
VISCOSITY @200 C (392 F) using the Brookfield RVT Spindle SC4-29 in CPS (mPa.s)	95,000 cps	20,000 cps	60,000 cps	38,000 cps	60,000 cps	60,000 cps
COLOR	Translucent	Natural	Natural, Brown, White, Black	Translucent	Natural, Brown, White, Black	Natural, White
PACKAGING	Pellets (45 lb.bags)	Pellets (50 lb.bags)	Cartridges (45) (33 lb.boxes)	Cartridges (45) (24 lb.boxes)	Pellets (50 lb.bags)	Pellets (50 lb.bags)
DIRECTIONS FOR USE						
PROCESSING TEMPERATURE	190-210°C (374-410°F)	150-170°C (302-338°F)	180-200°C (356-392°F)	180-200°C (356-392°F)	180-200°C (356-392°F)	180-200°C (356-392°F)
ROLLER APPLICATION	18-60 m/min. (59-197 ft/min.)	18-40 m/min. (59-131 ft/min.)	18-60 m/min. (59-197 ft/min.)	12-40 m/min. (40-131 ft/min.)	20-60 m/min. (65-197 ft/min.)	20-50 m/min. (65-164 ft/min.)
NOZZLE APPLICATION	10-40 m/min. (33-131 ft/min.)				13-24 m/min. (43-79 ft/min.)	12-25 m/min. (40-82 ft/min.)
TYPE OF EDGING						
PVC (A)	1	1	1	1	1	1
SOLID WOOD (B)	2	2	1	1	1	1
VENEER	1	1	1	1	1	1
MELAMINE	1	1	1	1	1	1
POLYESTER	1	2	1	1	1	1
HPL (C)	--	2	2	2	2	2
ABS	1	1	1	1	1	1
TYPE OF EDGING MACHINES						
- Manual straight edgebanders	2	2	--	--	1	1
- Manual contour edgebanders	2	1	--	--	2	2
- Automatic edgebanders (12-25 m/min.)	2	1	1	1	1	1
- Automatic edgebanders (18-60 m/min.)	1	--	1	1	1	1
- Computer controlled panel processing centers	1	--	--	--	2	2
- Flow through contour edgebanders	1	--	--	--	2	2
- Softformers	2	--	--	--	1	--
CHARACTERISTICS						
	<ul style="list-style-type: none"> <li>Premium translucent hotmelt</li> <li>Recommended for computer controlled panel processing centers, as well as straight edgebanders</li> <li>Ideal for thick and thin PVC, veneer, melamine, polyester and ABS edging</li> <li>Ideal for thick and thin PVC, veneer, melamine, polyester and ABS edging</li> <li>Translucent color means no glue line and no color changes</li> <li>Medium/High viscosity</li> </ul>	<ul style="list-style-type: none"> <li>Low temperature hotmelt</li> <li>Specially designed and recommended for manual contour edgebanders</li> <li>Ideal for thick and thin PVC, veneer, melamine, polyester, and ABS edging</li> <li>Good bonding properties</li> <li>Good heat resistance</li> <li>Long open time</li> <li>Low viscosity</li> <li>Required PVC minimum thickness is 0.024"</li> </ul>	<ul style="list-style-type: none"> <li>All purpose hotmelt in cartridge format</li> <li>Recommended for HolzHer edgebanders</li> <li>Ideal for all types of edging.</li> <li>Good resilience during cold and hot temperatures</li> <li>Good heat resistance</li> <li>Medium viscosity</li> </ul>	<ul style="list-style-type: none"> <li>Premium translucent hotmelt in cartridge format</li> <li>Recommended for HolzHer edgebanders</li> <li>Ideal for all types of edging.</li> <li>Good resilience during cold and hot temperatures</li> <li>Low viscosity</li> <li>Translucent color means no glue line and no color changes.</li> </ul>	<ul style="list-style-type: none"> <li>General purpose hotmelt</li> <li>Recommended for straight edgebanding and softforming.</li> <li>Ideal for all types of edging.</li> <li>Good resilience during cold and hot temperatures</li> <li>Good heat resistance</li> <li>Medium viscosity</li> </ul>	<ul style="list-style-type: none"> <li>Premium general purpose hotmelt</li> <li>Recommended for straight edgebanders</li> <li>Ideal for thick and thin PVC, solid wood, veneer, melamine, polyester and ABS edging</li> <li>Superior bonding properties</li> <li>High heat resistance</li> <li>More consistent viscosity</li> <li>Better heat stability in the melt pot</li> </ul>

**A** The back side of the PVC edges must be primed

**B** Solid wood edges with high resin content must be primed with a water-based adhesive diluted 50% with water.

**C** The back surface of HPL may vary. For best results, we recommend priming HPL with a solution of contact cement diluted with solvent. Contact cement should not contain any turpentine, oils and plasticizers.

1 Highly recommended

2 Recommended

### TESTS WITH YOUR OWN MATERIALS ARE ABSOLUTELY NECESSARY

**Cleaning** Pre-clean while hot using a spatula. Cold residues can be removed using toluene or some chlorinated solvent.

**Storage** According to our experience, the adhesive is stable for at least 12 months when kept in a dry and cool place. Suggested storage conditions are normal ambient temperatures below 37.8°C or 100°F.

**Safety** Operators should be cautioned concerning the hazards of working with molten hotmelts. Serious burns can result from touching molten adhesives and parts of the equipment used to apply the hotmelts. Protect eyes and wear protective clothing. Hotmelt vapors can irritate the respiratory organs. Avoid inhaling.

**First Aid** If skin comes in contact with molten adhesive, quench the affected area immediately with water.